Fact Sheet

RESEARCH ON CASINGS USED IN GROUNDWATER MONITORING WELLS

PROBLEM

In 1986, the EPA published guidance that stipulated that any casing (pipe) used in a groundwater monitoring well should be either stainless steel or Teflon. The EPA believed that PVC was not suitable for monitoring organics because it might sorb or leach contaminants. This ruling had a tremendous impact on the monitoring industry because, at that time, most monitoring wells were constructed of rigid PVC. The difference in cost between the materials is quite substantial. For example (using 2-inch diameter, 5-foot-long casings for comparison), the cost of stainless steel casings is approximately 12 to 15 times that of PVC, and the cost of Teflon casings is approximately 24 times that of PVC.

The U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), in conjunction with the U.S. Army Environmental Center, has conducted research studies that have looked at the suitability of various commonly used well casing materials.

SOLUTION

A literature review that CRREL conducted revealed that there is little scientific evidence to support the EPA's position. Subsequently published research studies by CRREL showed that PVC actually had less impact on contaminant concentrations than either Teflon or stainless steel. PVC had very little impact on the concentrations of organic contaminants, while Teflon sorbed large amounts of some organics very rapidly. CRREL's studies also showed that stainless steel casings should not be used for monitoring metals because they sorbed and leached metal contaminants. Based on the research of CRREL and others in the industry, new guidelines have been developed and published in new EPA guidance. These guidelines acknowledge that none of the materials can be used in all instances, but allow for the use of PVC in most situations and give specific guidance when not to use these materials.

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